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THE KEY ROLE OF AIR POWER IN THE DEFENCE OF AUSTRALIA

by

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ABSTRACT

TITLE: The Key Role of Air Power in the Defence of Australia

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The defence of the island continent of Australia poses difficult problems for its population of 17 million people. While there are no aggressors on the horizon, the defence of the country requires a clear focus to put in place an effective defence at a time of continuing resource constraints. Air power assumes a key role in the defence of Australia because its characteristics, such as mobility, flexibility, versatility, speed of response and reach, are well-matched to Australia's unique situation. While the defence of the sea-air gap to the north remains the prime consideration for defence planners, a task for which air power is well-suited, an offensive strategic strike capability is essential. The flexible strike capability provided by airpower can deter enemies, allow the initiative to be regained and the risks of gradual attrition of friendly forces to be avoided.

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BIOGRAPHICAL SKETCH

Wing Commander Kenneth N. Birrer has served in the Royal Australian Air Force as an Air Electronics Officer for 24 years. He has flown in maritime air operations on P3B and P3C aircraft, and on Nimrod MR1 aircraft during an exchange tour with the Royal Air Force. He has also served as a staff officer in operational requirements and in personnel policy and plans and has commanded a base support squadron. He most recently worked on a small team that developed a new officer corps structure and associated training and employment policy before attending Air War College, Class of 1993. He was made a Member of the Order of Australia - Military Division in 1992. He will be promoted to Group Captain on his return to Australia in 1993.

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THE KEY ROLE
OF
AIR POWER IN THE DEFENCE OF AUSTRALIA

...air power has been accorded the pre-eminent role in the defence of Australia because of our geostrategic circumstances....Given the enormous area of Australia's "direct military interest" and Australia's limited population and fiscal resources, air power provides the only practicable means of exerting independent military power in any timely or comprehensive fashion....Air power also provides Australia with its only significant offensive capability in an otherwise defensive posture. (4:35)

INTRODUCTION

The quotation above by the eminent Australian defence analyst Professor Desmond Ball recognises the key role of air power in the defence of Australia. While recent conflicts, such as the Gulf War, show that air power may in some circumstances constitute the most effective form of combat power, such lessons can only be applied in the context of a nation's geography, history, culture, regional situation, population, foreign policy, political will and national resources.

Although Australia is a relatively secure country, the initial euphoria accompanying the end of the Cold War has evaporated and been replaced by the realisation that a multipolar world racked by unchecked ethnic and nationalist tensions may be more dangerous than in the past. There is a risk that power politics, national rivalries and ethnic tensions will dominate international security concerns. (21:7) In particular, the Pacific region is marked by "territorial disputes, boundary disputes and historic animosities among nations, religions, ethnic and culture groups." (15:33) These problems could create further instability and conflict in the region.

While there are regional concerns, reductions in the United States' armed forces will reduce its capacity to intervene militarily throughout the world. This factor underlines the need for Australia to defend itself in situations short of general war

without direct US military involvement. Although Australia and the United States have strong political and defence ties, self-reliance is a key tenet of Australia's defence policy.

Like most countries, Australia must balance its defence needs with other economic imperatives. Australia's defence policy must be clearly focused to ensure that its selected strategy - its objectives, resources and concepts - is both feasible and appropriate. This paper argues that air power is the key element in the military strategy for the defence of Australia. Air power provides the means to deal with credible scenarios in the Australian area of interest. Its characteristics are ideally suited to the demands of Australia's geographic situation, population and resources. The paper will discuss Australia's situation, the regional environment, and present defence policy. The key role of air power in this policy will then be examined.

JOINTNESS VERSUS AIR POWER ADVOCACY

Air, sea and land power are essential to defend Australia. Almost all military operations in the defence of Australia would require joint action by two or all of the services. However, effective joint operations are team operations, requiring an appreciation of each service's capabilities in a particular situation and how they may best be used in a complementary fashion. The starting point must therefore be a clear understanding of the strengths and weaknesses of each form of combat power.

Air power may also be used independently of other forms of combat power in some circumstances, as indeed can land and sea power. The defence of Australia does not require creation of a role for each service in each situation; rather, optimum use of forces that are most suited to a particular situation is necessary. (22:iii) The strengths and weaknesses of air power in the Australian situation must therefore be clearly understood.

THE AUSTRALIAN SITUATION

Australia has a unique goestrategic position. It is the only country that occupies

an island continent and shares no land borders with other nations. It is the sixth largest country in the world, an area the size of continental United States without Alaska. It is also, apart from Antarctica, the driest continent. Its coastline stretches for over 36000 kilometres, much of its area is arid and inhospitable, and most of its small population of 17 million people and the bulk of its industry are found in the south-east corner of the country. The geography and climate of the continent vary enormously, from the cool temperate weather and topography of the south to the hot desert of much of the centre of the country, to the wet lushness of the tropical north. Transport and communications over such a large and varied country pose particular problems, especially in the sparsely settled north and interior. Figure 1 on page 4 shows East Asia and Oceania. The huge distances between the Australian mainland and its off-shore territories are noteworthy.

Australia is a major economic power in South-East Asia. Its Gross Domestic Product (GDP) exceeds that of India, or Malaysia, Indonesia, Singapore and Thailand combined. (24:157, 161, 171, 164, 178, 181) Foreign trade, most of which travels by sea, is especially important to Australia because it is a major exporter of primary commodities, such as minerals, wool and meat, and imports large quantities of manufactured goods.

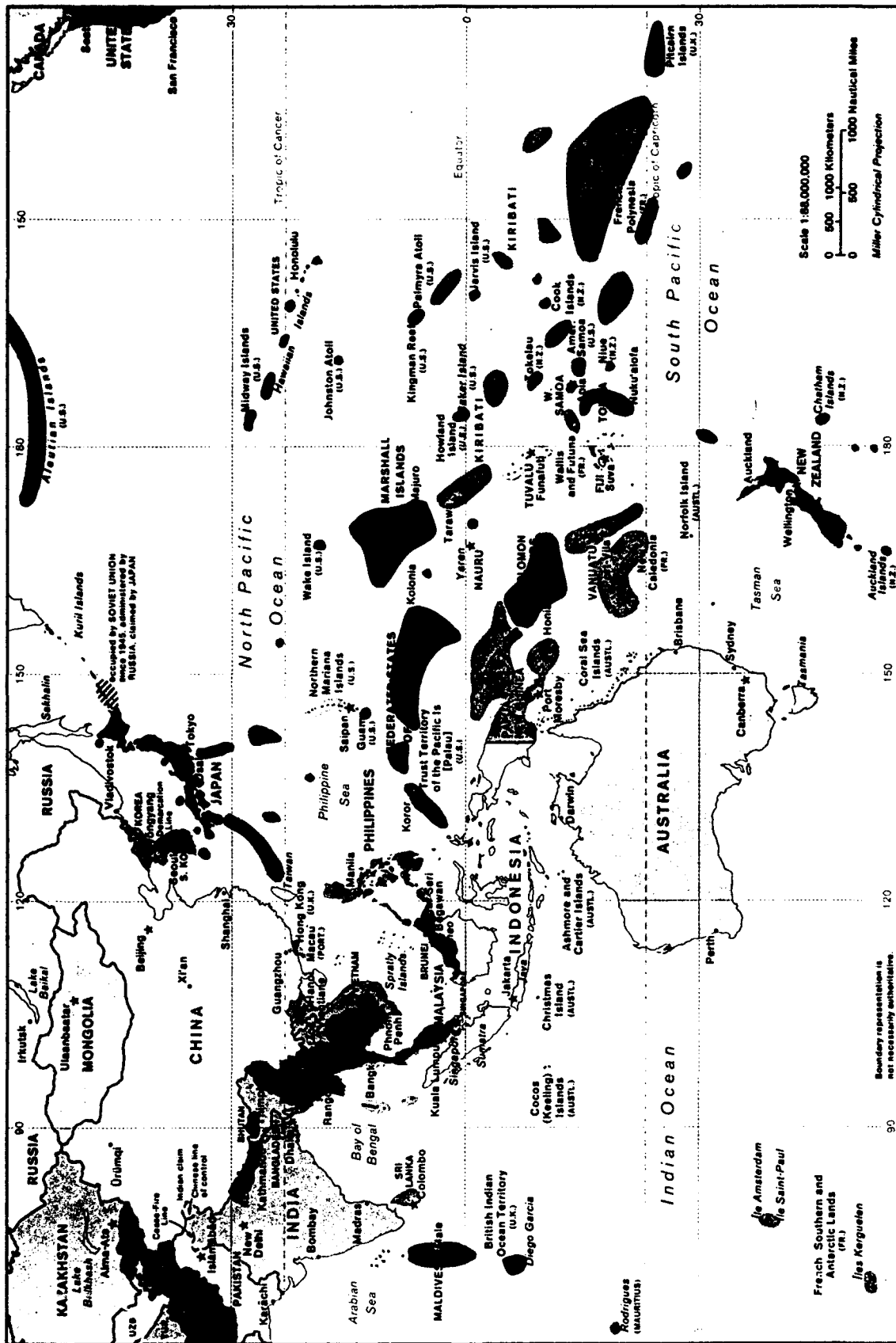
Given the remoteness of Australia from Africa to the west, South America to the east, broken only by the small island nations of the Pacific, and the Antarctic to the south, the north is the most likely area from which a major threat to Australia's security could emerge. While contingencies could arise elsewhere, such as the military coup in Fiji in 1987, short of global conflict they are unlikely to affect the security of Australia and its territories.

REGIONAL APPRECIATION

Australia's security and, increasingly, its economic prosperity, are tied to its neighbours in South-East Asia. This region is a dynamic area of diverse cultures, political systems and economies. At the 1993 Pacific symposium sponsored by the National Defence University, Professor Kenneth S. Courtis noted that "While much of the world pains in recession, Asia continues to be a region of dynamic expansion. From Thailand to Taiwan, from Guandong to Jakarta, growth is explosive." (8:1)

Figure 1

East Asia and Oceania



Australia's nearest northern neighbours are Indonesia and Papua New Guinea, the former a chain of 13,677 islands with the fourth highest population of any country in the world, and the latter a sparsely settled, newly emerging nation. Singapore is one of the young "tigers" of the Pacific, with a thriving economy and a well-educated and productive workforce. Malaysia and Thailand are democracies that are experiencing rapid economic growth. Cambodia remains a country in turmoil, its economy wrecked by decades of war, with some prospect of a future peace. Vietnam is a communist country, rapidly emerging from the isolation that accompanied the end of the Vietnam War. Lastly, the two giants, China and India, sit on the edge of the region. India is already a regional power and China is seeking to expand its influence as both Russia and the USA reduce their military presence.

While there are no identifiable threats to Australia's security, there are areas of concern. Australia has strong economic and military bonds with Papua New Guinea, where a fragile democracy is already battling a secessionist movement on Bougainville. Papua New Guinea also shares a land border with West Irian, part of Indonesia, which has been a source of tension in the past as West Irian guerillas opposed to Indonesian sovereignty used Papua New Guinea as a safe haven. Nationalist guerrillas in East Timor still oppose its annexation by Indonesia. The succession to President Suharto in Indonesia could also create instability in that country. Malaysia has in the past experienced clashes between its Malaysian majority and Chinese minority populations. The Philippines remains a weak democracy in the face of a poor economy, a Communist insurgency and other separatist movements. Thailand continues as a tenuous democracy with a long history of military coups. Singapore retains its authoritarian regime, despite the facade of democracy. Lastly, in Malaysia and Indonesia, the latter the world's largest Moslem country, Islamic fundamentalist movements are beginning to emerge. (19:27)

Although political, religious and ethnic problems are potential sources of conflict, economic concerns could also be a factor. For example, Indonesia is burdened with a very high population density and a high population growth rate. Its need for economic growth could lead to disputes over shared maritime natural resources, such as the oil

deposits beneath the Timor Sea between Australia and Indonesia. The Spratly Islands, insignificant except for the possible oil deposits located in their area, are claimed by China, Vietnam, Taiwan, the Philippines and Malaysia. (3:17) Moreover, China recently reaffirmed its claim to all of the Spratly Islands and its readiness to use force to back up its claim. (2:20)

Table 1 shows key economic indices for countries in the region, illustrating its diversity in terms of population and economies. Particularly noteworthy are the high growth rates in Singapore, Thailand, Malaysia and Indonesia. However, despite the latter's high economic growth rate, per capita income remains low.

Table 1

Key Economic Indices

Country	Population (million)	GNP (US\$bn)	1991 Growth Rate (%)	Per Capita Earnings-1991 (\$US)
Australia	17	293	1.5	13480
Indonesia	190	100	6.5	560
Malaysia	18	43	10	2460
Singapore	3	34	6.5	11245
Philippines	66	45	2.5	700
Thailand	57	80	8	1413
Cambodia	7	0.9	0	130
Vietnam	68	15	2.4	230
India	866	220	3.0	350
New Zealand	3	44	0.7	11370
Papua-New Guinea	4	3	7.8	865

Source: "Military Balance Asia-Pacific." Asian Defence Journal, Jan 1993.

In contrast with the prevailing international trend of shrinking defence budgets,

most South-East Asian nations, with the notable exception of Vietnam, are increasing their defence spending. The Singaporean Defence Minister recently stated that "No country in South-East Asia...has declared a peace dividend. No one has reduced its defence expenditure." (1:66) CINCPAC, Admiral Larson, also recently commented that "Today the most rapidly modernising military forces in the world are in the Asia-Pacific region". (16:3) One reason for this situation is that the focus of most countries in the region has shifted from counter insurgency to conventional warfare capabilities as their internal conditions and economies improve. Secondly, increased air and naval capabilities are important to the patrol and protection of their extended territorial waters, offshore territories and economic zones. (1:68) For example, Malaysia reportedly is interested in the purchase of MiG-29 aircraft at favourable prices from Russia. (18:30) Similarly, China has been reported as considering the purchase of an aircraft carrier from the Ukraine. (14:26)

Table 2 shows key strengths and weapon systems in regional forces. One important trend is the introduction of high technology weapons systems into the region, best illustrated by the possession of F-16 aircraft by Singapore, Indonesia and Thailand. India also has a large inventory of modern military equipment.

Table 2

Regional Military Capabilities

Country	%GNP to Defence	Total MiPy (000)	Major Capabilities		
			Air	Sea	Land
Australia (1)	2.4	68	23 F-111, 73 F/A-18, 19 P3C Orion	10 lgc warships, 6 subs	30000 men, 103 tanks
Indonesia	1.5	278	12 F-16, 14 F-5, 28 A-4	17 frigates, 2 subs	212000 men, 155 light tanks
Malaysia	3.8	128	17 F-5, 32 A-4	4 frigates, 8 missile craft	105000 men, 26 light tanks
Singapore	5.0	56	8 F-16, 40 F-5, 75 A-4, 28 Hunters, 4 E2C	6 corvettes, 6 missile craft	45000 men, 350 light tanks

Table 2 - continued

Philippines	2.2	107	9 F-5, various COIN A/C	1 frigate, 37 patrol craft	68000 men, 41 light tanks
Thailand	2.6	283	20 F-16, 57 F-5, various COIN	6 frigates, 3 corvettes	190000 men, 480 light tanks
Cambodia	Not known	112	17 MiG-21	10 coastal craft	55000 men, 70 tanks
Vietnam	Not known	1041	20 SU-17, 40 SU-22, 125 MiG-21	7 frigates, 8 missile craft	900000 men, 2250 tanks
India	3.2	1265	54 MiG-29, 56 MiG-27, 80 MiG-23, 294 MiG-21, 88 Jaguars, 36 Mirage 2000	2 light A/C carriers, 5 destroyers, 21 frigates, 13 corvettes, 17 subs	1100000 men, 3700 tanks
New Zealand (2)	1.9	11	21 A-4, 6 P-3K Orion	4 frigates	5000 men, 26 light tanks
Papua-New-Guinea	1.3	4	Tpt and light MR only	5 patrol boats	3400 men

Source: The International Institute for Strategic Studies (IISS), The Military Balance 1990-91, Brassey's, London, 1991.

- Notes:**
1. The major capabilities of the Australian Defence Force, as planned in the mid-late 1990s, are detailed in Appendix 1.
 2. New Zealand's forces are included because Australia and New Zealand have strong defence bonds and share many interests.

In summary, while there are no identifiable threats to Australia, there is the potential for further instability and conflict in the region. Regional defence capabilities are significant and are steadily improving. Australian defence planners must focus on future possibilities, providing insurance against the more credible threats.

AUSTRALIAN DEFENCE POLICY

Australia's defence goals were set out by the present Government in "The Defence of Australia 1987" (a White Paper on defence) and re-iterated in the most recent strategic planning document:

The Government's approach to defence is to seek to reinforce the positive aspects of Australia's strategic environment and to provide an appropriate measure of insurance against future uncertainty. The fundamental elements of that approach

are based on:

Maintaining and developing capabilities for the independent defence of Australia and its interests;

Promoting strategic stability and security in our region; and

As a member of the Western strategic community working for a reduction in the level of tension between the superpowers and limiting the spread of influences in our region inimical to Western interests. (3:3)

This paper is concerned with the first of the goals detailed above: the independent defence of Australia and its interests. While Australia takes part in activities that contribute to the remaining two goals, for example, through participation in the United Nations forces in the Gulf War, Cambodia and Somalia, these commitments do not determine force structure and are secondary to the principal goal. (23:3) Moreover, a strong Australian defence force helps to stabilise the region by deterring aggression in Australia's area of military interest.

A policy of self-reliance is central to the defence strategy. Self-reliance means that the country's defence forces must be prepared to deal with any credible level of threat in Australia's area of direct military interest. The aim would be to prevent an aggressor attacking the country in its sea and air approaches, gaining a foothold on Australian territory, or extracting concessions by the threat of military force. (23:i) Self-reliance does not mean self-sufficiency: Australia does not have the resources to be self-sufficient in the military hardware, particularly high technology equipment, necessary to successfully prosecute modern warfare. One of the major benefits of the alliance with the United States is the access to high technology military hardware that it brings. (23:x) The policy of self-reliance also recognises that there may be circumstances where Australia's traditional allies, like the US, may be unwilling or unable to assist Australia in low-level conflict. For example, it is conceivable that a dispute pitting an Asian ally of the US against Australia could lead to strife.

Australia's area of direct military interest stretches "over 7000 kilometres from the Cocos Islands to New Zealand and the islands of the South-West Pacific, and over 5000 kilometres from the archipelago and island chain in the north to the Southern Ocean".

(23:2) This area, which includes Australia, Indonesia, Papua New Guinea, New Zealand and other near countries of the South-West Pacific, is about 10 percent of the earth's surface. The Australian Defence Force must therefore be prepared to deal with threats over a vast area. For example, the Cocos Islands are about 3300 kilometres west of the nearest major city, Darwin, in the Northern Territory. Like Christmas Island, the Cocos Islands are closer to Indonesia than Australia. Geography dictates that any conventional military attack would probably be directed against the northern approaches to the continent or its off-shore territories. (23:20)

The determination of potential threats is central to any military strategy. While no direct military threat to Australia can be identified at this stage, defence planning must provide for an uncertain and unpredictable future. (9:1) Conflicts can arise from the proximity of one nation to another, from disputes over resources, or from other strategic or regional issues in which two or more countries are involved. Threat assessments can be based upon a nation's intentions and/or capabilities. Intentions can be concealed or change quickly, for example, with a change in government. Moreover, not all conflicts arise from a logical appreciation of the risks involved in war. Iraq's decision not to withdraw from Kuwait under the imminent threat of the coalition air and land campaign does not appear logical from a Western point of view. For these reasons most nations plan their defence strategy and force structure on the basis of the present and future capabilities of countries in their area of interest. (13:25)

Most regional nations are now acquiring modern sea and air capabilities that could pose a threat to Australia. (3:27) Moreover, difficult economic conditions in the former Communist countries of Europe have led to a range of modern military equipment being offered at bargain basement prices. For instance, China has expressed interest in a Russian aircraft carrier. Indonesia has agreed to buy a package of former East German vessels, including 16 corvettes, nine minesweepers and 12 landing-class ships. (11:112) Arms proliferation at bargain basement prices could lead to a rapid change in the size and nature of the potential military threats to Australia.

Current Australian defence planning focuses on the possible types of lower-level conflict, given *present* regional military capabilities, that could be encountered in the

foreseeable future. There are two levels of credible conflict:

Low-level conflict (LLC): ...the adversary would normally seek to avoid engaging the ADF (*Australian Defence Force*).

Escalated low-level conflict (ELLC):...the adversary would be prepared to engage the ADF. (3:22)

More substantial conflict than LLC or ELLC would be dependent on the acquisition of force levels and equipment that regional nations do not currently possess. (3:23) For example, invasion in force of the Australian mainland would require substantial amphibious and sea and air escort capabilities. Intelligence should provide sufficient warning of the acquisition of these capabilities to allow an effective response to be prepared. Moreover, more substantial conflict would probably attract the support of Australia's traditional allies, for example, the US under the ANZUS pact. Self-reliance thus requires Australia to be prepared to deal with the higher level of escalated low-level conflict in its area of direct military interest. The defence force established to cope with these dangers would also provide the expansion base necessary to deal with more substantial threats, given sufficient warning time and the assistance of allies.

The government's defence strategy is essentially defensive, and is based upon the natural barrier provided by the sea-air gap to the north. Any enemy would expose his forces to assault in this area if he moved to attack the mainland. This strategy recognises that in Australia's unique geostrategic situation, small but capable air and sea forces could best defend against possibly numerically superior enemy forces. The strategy also acknowledges the difficulty of defending a huge land mass with small land forces.

Defence in depth through a layered, but seamless and progressive, defence of the sea-air gap to the north is envisaged. Defensive depth is provided by both the various layers or elements, which utilise a mix of forces, and by the distances involved for an enemy in operations in the area. There are no fixed boundaries in the layered defence, as forces would shift smoothly from one role to another as the situation required. The first layer consists of collection and evaluation assets to supply intelligence and warning of threats. The second layer comprises surveillance assets, both sea and air, to provide

broad area and selective surveillance of potential threats. The third layer consists of sea and air forces that would deny the use of the sea and air approaches to an enemy. The final layer comprises mobile land forces, supported as necessary by air and sea assets, that would deal with enemy incursions and protect military and civilian infrastructure in the area of operations. (3:26)

AIR POWER - THE KEY FACTOR

Air power plays the key role in the defence of Australia for several reasons. Firstly, its characteristics, such as mobility, speed, reach, flexibility and versatility, are well-matched to the Australian geographic situation. Secondly, it provides the only effective strategic strike option in the Australian defence forces. Such a capability is essential to wrest the initiative from an enemy and bring home to him the consequences of his actions. Most importantly, it has the capability to deal with credible threats in the area of direct military interest, and its characteristics, particularly its versatility and reach, allow it to operate responsively in the various layered elements that comprise the defence in depth strategy.

Of the four elements in the layered defence of Australia - intelligence and warning, surveillance, denial of the air and sea approaches, and land operations - all but denial operations could be encountered in LLC. Political considerations would probably limit denial operations to police and customs action short of engagement by fire until overt hostile action was taken by an aggressor.

Accurate intelligence and warning are essential to identify emerging threats. However, intelligence is unlikely to be totally accurate, always timely, or encompass the full range of information necessary to identify developing threats. The difficulty in gathering information that an enemy is determined to protect is illustrated by the coalition's failure to fully evaluate and locate the Scud missile threat in Iraq, despite many assets and six months of preparation. A further limitation of intelligence is that the information gained may be ambiguous. For example, the building of a chemical plant that can produce chemical weapons in addition to agricultural pesticides does not

signify, by itself, that a country has a chemical weapons program.

Surveillance is an essential activity in peace and any contingency. Surveillance entails timely, periodic and thorough sweeps of the vast area of Australia's area of direct military interest, coupled with coverage of smaller zones and/or particular activity, perhaps vessels or aircraft, arising from previous broad-area surveillance or other intelligence. Peacetime surveillance includes the use of military assets to patrol the Australian Fishing Zone, detect environmental threats, such as oil pollution, and detect and apprehend illegal immigrants and drug smugglers. In ELLC surveillance would include gathering target information as part of the sea and air denial campaign.

Active denial of the sea and air approaches to an enemy, including offensive action against aggressors, would be limited to ELLC or higher levels of conflict where the enemy was prepared to engage the ADF. Political considerations would probably impose limits upon friendly forces in engaging the enemy. For example, positive visual identification of enemy military forces could be required before military action could be taken against them. Similarly, denial operations could be limited by time, area or number and/or type of weapons to be employed. Denial operations may therefore include a range of graduated responses to enemy action, with greater freedom on the use of force at the higher end of ELLC.

Land operations against enemy incursions could be required in both LLC and ELLC. Such operations could range from the detection and apprehension of small groups of terrorists intent on harassment and destruction of civilian and military infrastructure, to dealing with troops landing on the northern coastline. Given the area of the sea-air gap and the resources available to deny its use to an enemy, a watertight defence against enemy incursions could not be assured. While police action against terrorists may be more appropriate, the magnitude of the task, given the area, sparse population, poor transport and communications and limited police resources, means that military intervention would be essential. The Kangaroo series of exercises in the north of Australia reinforced this conclusion, as a very substantial joint force was required to deal with small enemy forces.

In practice, the four elements in the layered defence would probably operate

simultaneously. Situations could escalate rapidly. For example, LLC could arise from a small incident, such as the seizure of a foreign fishing boat for illegal fishing, and deteriorate rapidly into ELLC as each side sought to impress its will on the other. Military forces in close proximity in a period of tension could be drawn into conflict by accident or human miscalculation. Since political considerations would probably require an aggressor to initiate the first hostile action, the initiative for determining the pace at which a situation could deteriorate into hostilities would rest with the aggressor.

The ADF must provide capabilities to deal with a threat that can escalate quickly, anywhere within Australia's area of direct military interest. These forces must be able to seamlessly carry out all four functions of the layered defence. These requirements dictate a force that has the prime characteristics of mobility, reach, flexibility, versatility and speed of reaction.

Mobility - the ease of movement by air compared with the obstacles to movement by sea and land that exist - is one of air power's great strengths. With modern navigation systems, increased range and air-to-air refuelling, aircraft can rapidly move to a threat area and carry out their tasks, often within hours. Mobility for aircraft is measured in terms of hundreds of miles per hour, while ships and land forces move perhaps a few hundred miles per day.

Reach or range of reaction is closely allied to mobility. Aircraft can range over long distances to carry out a variety of roles. The reach of air power also allows the battle to be carried to an enemy's homeland. While land and sea power can carry out similar roles, their slow speed imposes limits on their reach. In Australia's area of direct military interest, defence forces must be able to react quickly over long distances. A good example would be the response to any threat to Australia's distant island territories, such as the Cocos Islands. (See Figure 1) While ships would take days or weeks to cover the three thousand plus kilometres to the area, aircraft could be deployed in hours to operate against any aggressor and to transport land forces to the islands.

The flexibility and versatility of aircraft are central to the defence of Australia. Former Chief of the Air Staff of the Royal Australian Air Force Air Marshal Ray

Funnell perhaps expressed this most simply:

When almost anything is possible but almost nothing is probable, flexible, multi-role weapons systems have special importance...When there is no such (evident) threat, not only are resources more constrained but also the capabilities needed for the broad range of possible conflicts become less specific. In those circumstances - and especially where warning and defence preparation times are short - aircraft with their speed, versatility and powerful weapons systems are almost always the capability of first resort. (10:11)

The flexibility of aircraft derives from their ability to move quickly and effectively from one task to another and from one target to another. Their versatility derives from their ability to carry out a number of roles, sometimes during one mission. (20:28) The versatility of aircraft has increased with the trend to more capable multi-role platforms, like the RAAF's F-111 and F/A-18 aircraft, where sophisticated weapons and avionics allow a number of roles to be performed by one aircraft type. For example, the F/A-18 can be used in the air defence, maritime strike, land strike, interdiction and close support roles.

Speed of reaction is an aircraft characteristic that is closely related to mobility and reach. Only aircraft have the speed to react quickly to a threat in one part of Australia's area of direct military interest, and then switch rapidly to another area as the need dictates. Their speed also exposes them to hostile action for shorter periods and, with their three-dimensional manoeuvrability, provides some protection against enemy weapons.

Air power's speed, reach, mobility and flexibility allows a relatively small number of aircraft, allocated centrally, to play a major role in all elements of the layered defence. Additionally, lethality, speed of concentration, the edge which high technology provides to air power and the few combatant lives that are risked make air power ideally suited to the key role in the defence of Australia.

Aircraft armed with modern weapons and capable avionics have a high measure of lethality. The US Army defines lethality as "the assured capability to defeat an opponent", winning quickly to preserve lives. (22:1-3-29) The threat of aircraft action

can cause ships or land forces to restrict their movements, cease use of electronic equipment or retire. Without friendly air cover, land and sea forces are vulnerable to attack from the air. Precision guided weapons are a force multiplier in this regard, making aircraft even more lethal than in the past, as the air campaign in the Gulf War demonstrated.

The ability of aircraft to quickly concentrate, or achieve mass, is a unique characteristic of air power. Aircraft may take off from a number of widely separated bases to mass over a target. Speed of concentration is measured in terms of minutes or hours. This ability contrasts with the long period necessary to mass land and sea forces from dispersed locations.

In Australia's unique geostrategic situation, with a small population and a small but advanced industrial support base, high technology weapons systems provide the edge to offset potentially numerically superior forces. (7:5) Maintenance of this technological edge, in regional terms, is essential to the defence of Australia, although the increased air and naval capabilities being acquired by regional nations may compromise this advantage.

Air combat risks fewer lives for the potential results than any other form of combat power. Land and sea operations are manpower-intensive, risking large loss of life in a hostile situation. Use of such forces must therefore be weighed against the threat and the potential gains, imposing constraints on the use of such forces. Conversely, the small number of lives risked in aircraft operations makes their use more attractive and flexible.

While Australia has adopted an overall defensive stance, an offensive strategic strike option is essential to complement its denial strategy. (5:622) Wars can rarely be won without taking the offensive to threaten, damage or destroy the enemy. Without an offensive option, the enemy would retain the initiative to choose the place, time and type of hostile action. His forces would be safe in the sanctuary of his country until they initiated action. Moreover, his centre(s) of gravity, for example, the country's leadership, would also be safe. Such restrictions would negate options that could bring hostilities to a successful early conclusion. A purely defensive posture would also expose Australia to

the economic and environmental damage of a conflict fought only in Australian waters and territory.

A purely defensive posture would accept the heavy costs of a disproportionate response to small threats, dispersing and exhausting defence resources, and eroding the national will to resist. This is a particular problem in the Australian situation because of the huge area to be defended, the small population and the modest size of the defence forces. For example, the threat of one submarine to Australia's trade goods that are shipped by sea would require a huge commitment of ships, aircraft and other resources to protect friendly shipping. Additionally, a solely defensive strategy would expose a small defence force to the risk of attrition over time leaving it unable to carry out its tasks. This is a particular problem in the prime campaign for control of the air - "With it, almost everything is possible; without it, everything is difficult." (10:16) Offensive counter-air operations against enemy bases and aircraft on the ground are potentially far more effective and less costly in terms of resources required and attrition than strictly defensive counter-air operations. (5:161)

Multi-role air power provides Australia's most effective strategic strike capability. Australia's F-111 aircraft, armed with precision guided weapons, provide a potent, long-range strike capability that can act as a deterrent, demonstrate a presence, or inflict damage on an enemy. Moreover, the psychological shock of being attacked by aircraft at night with little capability to defeat the attacks may have an effect out of all proportion to the damage. The RAAF's F-111 aircraft have this capability in regional terms. Precision guided weapons also allow the enemy's centres of gravity to be struck effectively with small numbers of aircraft and little collateral damage. Submarines and special operations forces could also be used to inflict damage on some enemy targets, although their lack of flexibility and slow speed restricts their utility in this role.

The national character of the Australian people mandates an offensive strike option. History through the many wars in which Australians have fought this century - two World Wars, Korea and Vietnam - has shown that they are most effective in aggressive, offensive action, where their initiative and individuality are given rein. It is inconceivable that the Australian people would face protracted conflict and loss of life

without carrying the war to the enemy.

The threat of offensive strike operations may also deter LLC, for example, state-sponsored terrorist acts. The best recent example of this is the United States air strike against Libya in 1986. While the damage inflicted on Libya was not devastating by any means, the Libyan leader has apparently reduced his support for terrorist groups. (25:60) Such strikes could probably occur only after incidents had been positively sourced to a particular country, but they are an option to deal with acts which are sometimes so irrationally violent and unpredictable that normal means of defence are almost powerless. Air strikes using precision guided weapons against key installations or the national leadership could send a potent political message.

The Australian Government's defence policy recognises the importance of strategic strike:

The ability to attack an adversary's operational and support infrastructure and to interdict his lines of communication is important to applying pressure to force the adversary to cease hostilities, raising the costs to the adversary, controlling escalation or moving the focus of operations, and forcing the enemy to undertake extensive defensive measures. Although there would be significant political constraints on its use in lower level hostilities, it is an option which Government would wish to have available. (3:34)

While this policy understates the utility of this option, air power is most suited to this role. (4:42)

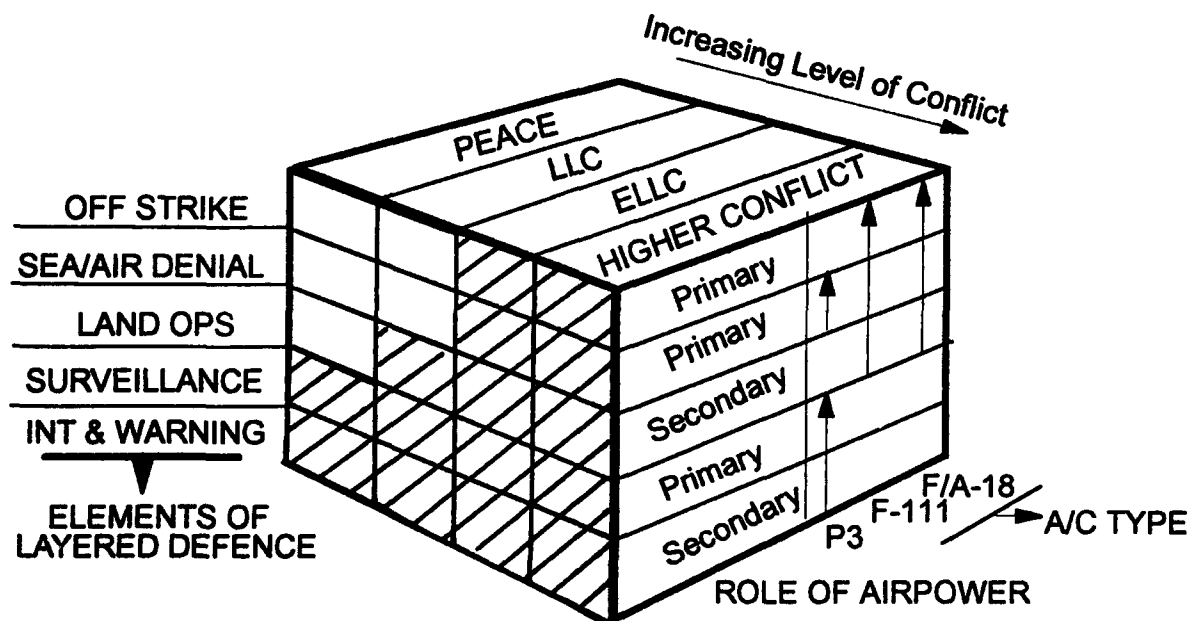
The potential of air power in the defence of Australia can only be realised by employing a variety of force multipliers. Force multipliers can be divided into "people factors" and certain types of equipment. People factors include quality leadership and personnel, both active duty and reserve, an on-going education program, realistic, regular training and comprehensive planning. Equipment factors includes adequate command, control and communications facilities and logistic support, investment in electronic warfare, precision guided weapons and air-to-air refuelling. The latter is particularly important to extend the reach and endurance of aircraft to cover the vast Australian area of direct military interest. Acquisition of Airborne Early Warning and Control

aircraft to provide extended radar coverage and control of aircraft operations over the northern areas would complement the long-range surveillance capabilities of the Over-the-Horizon Radar (OTHR) network currently under construction.

Although air power can be applied independently, the synergistic effects of coordinated operations with other forms of combat power are important. Air, sea and land forces complement each other. In some cases, air forces support sea and land forces. Equally, land and sea forces can support air power. For example, the threat of submarine attack may cause enemy vessels to disperse, reducing their combined anti-aircraft strength and increasing their vulnerability to air attack. Friendly land force pressure could also make the enemy move troops and supplies to reinforce their land elements, exposing them to air interdiction. Lastly, coordinated attacks, for instance, by submarine and aircraft guided weapons against an enemy surface force, are more likely to saturate its defences and increase his losses.

Figure 2 illustrates the key role that air power plays in the four elements of layered defence and in strategic strike operations. The hatched area represents the primary and secondary roles that air power would play in each element at various levels of conflict. Air power's characteristics, particularly the versatility of the three multi-role aircraft depicted, would allow a smooth transition from one role to another in response to a developing situation. Appendix 2 amplifies air power's roles and operations and the aircraft types involved in each element.

Figure 2
Air Power's Roles in Conflict



While air power is the key form of combat power in the defence of Australia, its weaknesses must also be acknowledged. The two greatest weaknesses of air power are its impermanence, in terms of maintaining a presence, and its need for bases. However, aircraft can maintain a presence, albeit at a cost, by keeping aircraft continuously on station, or by demonstrating a persistent capability to control or deny an area to the enemy. Bases must be protected against enemy air and/or land attack or sabotage. However, the chain of air bases that are being built in an arc around the north of Australia will provide the geographic separation necessary to ensure redundancy in the event of such an attack. Lastly, air power's flexibility and versatility result in a plethora of demands for a scarce resource, risking its dissipation in low priority operations. Valuable aircraft assets must be centrally allocated by a experienced senior airman, not distributed in penny packets for exclusive use by lower commanders.

CONCLUSION

The defence of Australia poses difficult problems, given its vast area, small population and limited resources. Its security and economic prosperity are linked to the nations of South-East Asia to the north, which is the most likely area in which a threat could develop. While there is no identifiable threat to Australia's security at present, defence planning must provide self-reliant insurance against uncertain and unpredictable future developments in South-East Asia. Government planning currently focuses on two credible threat levels, given present regional military capabilities: Low-Level Conflict (LLC) and Escalated Low-Level Conflict (ELLC). In the former the enemy would try to avoid engaging the ADF, while in the latter the enemy would be prepared to engage those forces. More substantial conflict would require capabilities that regional nations do not currently possess, although their air and naval forces are improving as their internal and economic situations strengthen.

Australia's military strategy is based on the defensive advantages offered by the sea-air gap to the north of the country. The strategy envisages a seamless, layered defence of the sea-air gap, providing defence in depth. Intelligence and warning,

surveillance, denial of the sea and air approaches and land operations are elements in the layered defence. A fifth element, a strategic strike capability, is essential to retain the initiative and carry the war to the enemy, with a view to bringing about a successful conclusion to hostilities before attrition takes its toll of the small Australian forces.

Air power's characteristics, such as mobility, reach, flexibility, versatility, speed of reaction, lethality, speed of concentration, emphasis on high technology and few combatants are ideally suited to the defence of Australia's area of direct military interest, an area 10 percent of the earth's surface. These characteristics allow air power to react seamlessly to an escalating threat through all elements of the layered defence, assuming a key role in the defensive strategy. Air power also provides the only significant offensive or strategic strike option in Australia's defence arsenal. While land and sea power are also essential to the defence of Australia, air power is uniquely suited to Australia's geostrategic situation.

Maintenance and development of air power's capabilities to play the key role in the defence of Australia must be a prime concern of defence planners. As Field Marshal Montgomery once said, "If we lose the war in the air, we lose the war and lose it quickly." (6:9) This is a lesson that is even more important in Australia's unique geostrategic situation.

GLOSSARY

ADF	Australian Defence Force
ANZUS	Australia, New Zealand and United States Defence Pact
CINCPAC	(US) Commander in Chief Pacific
COIN	Counter Insurgency (Aircraft)
ELLC	Escalated Low Level Conflict
GDP	Gross Domestic Product
GNP	Gross National Product
LLC	Low Level Conflict
MR	Maritime Reconnaissance (Aircraft)
OTHR	Over-The-Horizon Radar (Network)
RAAF	Royal Australian Air Force

BIBLIOGRAPHY

1. Acharya, Amitov. "Explaining the Arms Build-Up in South-East Asia." Asian Defence Journal Vol 1/93 (January 1993), pp. 66-68.
2. "A Strategic Framework for the Asian Pacific Rim: Report to Congress." Asia-Pacific Defence Forum, Volume 17, Number 2 (Winter 1992/93), pp. 15-26.
3. Australia's Strategic Planning in the 1990s. Department of Defence, Canberra, September 1992.
4. Ball, Professor Desmond. "Air Power in the Regional Balance: Maintaining the Peace in South-East Asia." Smaller but Larger, Australian Government Publishing Service, Canberra, 1991, pp. 35-70.
5. ----. "The Future of Air Power in the Defence of Australia." Air Power. Permagon-Brasseys Defence Publishers, Sydney, 1988, pp. 619-649.
6. Basic Aerospace Doctrine of the United States Air Force (AFM 1-1, Volume 1). Washington DC: Department of the Air Force, 1992.
7. Beazley, the Honourable Kim C. "Australian Defence Policy." Air Power. Permagon-Brasseys Defence Publishers, Sydney, 1988, pp. 3-15.
8. Courtis, Professor Kenneth S. "The Role of the Pacific Rim in the Global Economy - Prospects and Perspectives." A paper presented at the 1993 Pacific Symposium, sponsored by the National Defence University, Hawaii, 3-4 March 1993.
9. Dibb, Paul. Review of Australia's Defence Capabilities. Canberra: Australian Government Publishing Service, Canberra, 1986.
10. Funnell, Air Marshall R.G. "The Essential Place of Conventional Airpower in an Uncertain 21st Century." Smaller but Larger, Australian Government Publishing Service, Canberra, 1991, pp. 9-18.
11. Friedman, Norman. "World Navies in Review." Naval Institute Proceedings, Volume 119/3/1,081 (March 1993), pp. 94-118.
12. Joint Warfare of the US Armed Forces (JOINT PUB 1). Washington DC: Department of Defence, 1991.
13. Jordan, Amos A., Taylor, William J. Jr and Korb, Lawrence J. American

National Security. Baltimore: The John Hopkins University Press, 1990.

14. Klintworth, Gary. "Latest Soviet Carrier for Beijing Fleet?" Asia-Pacific Defence Reporter, Vol XIX, No 2/3 (August-September 1992), pp. 26-27.
15. Larson, Admiral Charles R. "Uncertainties, Turbulence Head Concerns." Defence 92 (July-August 1992), pp. 31-41.
16. ----. "Remarks by Admiral Charles R. Larson to Associated Press Managing Editors - 20 Nov 92." A paper provided by Admiral Larson to the Air War College International Officers, Hawaii, March 1993.
17. "Military Balance Asia-Pacific." Asian Defence Journal 1/93 (January 1993), pp. 60-121.
18. Richardson, Michael. "Malaysia Tempted by Cut-Price MiG-29s." Asia-Pacific Defence Reporter, Volume XVIII/XIX, No 21/1 (June-July 1992), pp. 30-31.
19. ----. "Indonesia: What Role for Islam?" Asia-Pacific Defence Reporter, Volume XIX, No 2/3 (August-September 1992), pp. 27-28.
20. Royal Australian Air Force Airpower Manual (AAP1000). Canberra: Royal Australian Air Force Airpower Study Centre, 1990.
21. Schlesinger, James. "New Instabilities, New Priorities." National Security Decision Making - NS623, Book 2, Air University, Maxwell AFB, Alabama (1992), pp. 7-14.
22. Service Warfighting Philosophy and Synchronisation of Joint Forces (AFSC Pub 2). Norfolk: National Defence University, 1992.
23. The Defence of Australia 1987. Canberra: Department of Defence, 1987.
24. The Military Balance 1991-1992. London: the International Institute for Strategic Studies, Brasseys, 1991.
25. Zimmermann, Tim. "The American Bombing of Libya: A Success for Coercive Diplomacy?" Military Studies Course - MS610 - Book 3, Air War College, Maxwell AFB, 1992, pp. 52-61.

APPENDIX 1

AUSTRALIAN DEFENCE FORCE CAPABILITIES

MID-LATE 1990S

	Air Force	Navy	Army
Personnel (30 Jun 91) (1)	22055	15786	30789
Major Assets	two sqn of 22 F-111 strike/recce a/c (2)	three guided missile destroyers	21 infantry battalions (15 Reserve)
	three sqn of 73 F/A-18 tactical fighter a/c	six guided missile frigates	6 APC and recce regiments
	two sqn of 19 P3C maritime patrol a/c	eight light patrol frigates	one armoured regiment with 103 Leopard tanks
	1 sqn of 6 B707 refuel/long-range tpt a/c	six long-range conventional submarines	105 105mm guns 148 M2A2 guns
	two sqn of 24 C-130 med-range tpt a/c	6 inshore minehunters	36 M198 155mm medium guns
	one sqn of 10 Caribou light tpt a/c	two fleet supply and support vessels	three regional force surveillance units
		15 patrol boats	four tactical air tpt sqn of 39 Blackhawk helos, 25 Iroquois helos
		7 Seaking helos	
		16 Seahawk helos	

Notes:

1. Uniformed personnel strength as at 30 Jun 91 extracted from Defence Report 1990-91, Australian Government Publishing Service, Canberra, 1991, p189.
2. The Australian Department of Defence recently announced that 18-22 ex-USAF F-111 aircraft would be purchased from the United States to extend the service life of the F-111 force and to provide replacements for attrition.
3. Table shows expected force structure in mid-late 1990s. Data taken from Australia's Strategic Planning in the 1990s, Australian Defence Department, Canberra, 1992, pp 30-35.

APPENDIX 2

ROLES OF AIR POWER IN THE DEFENCE OF AUSTRALIA

Element	Role of Air Power	Air Operations	Aircraft Types
Intelligence and Warning	Secondary - joint task with sea power, OTHR and other means	Aerial surveillance, surveillance and electronic warfare operations	P3C, F-111
Surveillance	Primary - joint task with sea power	As above	As above
Denial of Sea and Air Approaches	Primary - joint task with sea power	Control of the air, maritime strike, interdiction, combat air support of sea forces	P3C, F-111, F/A-18
Land Operations	Secondary - in support of land forces	Control of the air, interdiction, combat air support of land forces, airlift operations	F/A-18, F-111, C-130, Caribou
Offensive Strike	Primary - possible support by submarines and special operations forces	Strategic land strike	F-111, F/A-18